

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent of: William Stuchlik et al.
Patent No.: RE39,581 E
Issued: April 24, 2007
Confirmation No.: 9423
For: BRUSH HEAD POSITIONING SYSTEM

April 15, 2009

REQUEST FOR EXPEDITED ISSUANCE
OF CERTIFICATE OF CORRECTION UNDER 37 CFR 1.322

TO THE COMMISSIONER FOR PATENTS,

SIR:

On studying the above-identified patent, the following errors, apparently made by the Patent and Trademark Office, were found (these errors are also noted on the attached form PTO/SB/44):

Column 20, claim 9, between lines 52 and 53: - - - a sensor detecting a position of the head assembly relative to the [surface] *support*; - - - should be inserted.

Column 25, claim 29, lines 61-62: - - - *and wherein the control is generating a signal in response thereto*, - - - should be deleted.

REMARKS

In accordance with 37 CFR 1.322, a copy of Amendment C, dated August 8, 2006, a copy of the Status of Claims and Revised Support for Claim Changes dated August 8, 2006, and a copy of the Notice of Allowance dated November 22, 2006, are attached.

We respectfully request that a certificate of correction be issued.

Respectfully submitted,

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FRA/clp
*Enclosures

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of William Stuchlik et al. Art Unit 1744
Serial No. 10/684,324
Filed October 10, 2003
Confirmation No. 9423
For BRUSH HEAD POSITIONING SYSTEM
Examiner Terrence R. Till

August 8, 2006

AMENDMENT C

TO THE COMMISSIONER FOR PATENTS,

SIR:

In response to the final Office action mailed May 8, 2006,
please enter the following amendments and consider the following
remarks.

Amendments to the Claims begin on page 2 of this paper.
Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

Please cancel claim 31.

32. (amended) Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;
a head assembly on the vehicle for treating the surface;
a support connected to the head assembly;
an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly;

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input; and

a switch on the vehicle for sensing when the head assembly is in contact with the surface, and wherein the control is responsive to the switch for controlling the actuator to lower the support and compress the spring the preset amount.

33. (amended) Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;
a head assembly on the vehicle for treating the surface;
a support connected to the head assembly;
an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly;

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input; and

a linear potentiometer between the head assembly and the support for sensing a length of the spring, and wherein the control is responsive to the linear potentiometer for controlling the actuator to lower the support and compress the spring the preset amount.

Please cancel claim 34.

35. (amended) Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;

a head assembly on the vehicle for treating the surface;

a support connected to the head assembly;

an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly; and

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input;

wherein the support comprises a nut and wherein the actuator comprises a screw in threaded engagement with the nut and a motor for rotating the screw to raise and lower the nut, said apparatus further comprising a connector assembly connecting the head assembly and the support; and

wherein the connector assembly comprises an outer tube containing said spring and connected to the head assembly, said support further comprising an inner tube secured to the nut and

slidable inside the outer tube, and a pin connected to the inner tube slidable in a slot in the outer tube.

36. (amended) Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;

a head assembly on the vehicle for treating the surface;

a support connected to the head assembly;

an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly;

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input; and

a linear sensor for detecting a length of the spring, the control being responsive to the linear sensor to operate the actuator to raise and lower the support.

37. (amended) Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;

a head assembly on the vehicle for treating the surface;

a support connected to the head assembly;

an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly; and

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in

contact with the surface and the spring is compressed a preset amount corresponding to the user input.

wherein the support comprises a nut and wherein the actuator comprises a screw in threaded engagement with the nut and a motor for rotating the screw to raise and lower the nut, said apparatus further comprising:

a detector for providing a count corresponding to the position of the support relative to the actuator;

a position control set by an operator to indicate a preset amount; and

a comparator for comparing the count to the preset amount, said control being responsive to the comparator to lower the support the preset amount below a position at which the head assembly is in contact with the surface.

REMARKS

Applicants have thoroughly considered the Examiner's remarks and the application has been amended in light thereof. Claims 1-30, 32-33 and 35-38 are presented in the application for further examination. Claims 32, 33 and 35-37 have been amended by this Amendment C. Reconsideration of the application claims as amended and in view of the following remarks is respectfully requested. The following remarks will follow the sequence of the Office action. The Arabic numerals beginning each paragraph correspond to the numbered paragraphs of the Office action.

Claims 31 and 34 have been canceled. Claims 32, 33, 35, 36 and 37 have been rewritten in independent form. It is noted that claim 36 depended from claim 35. However, the subject matter of claim 35 has not been incorporated in independent claim 36.

* 3. A supplemental Oath/Declaration for Reissue Patent Application is enclosed.

4.-8. Claims 31 and 34 have been canceled by Amendment C.

9. Claims 1-30 stand allowed.

10. As noted above, claims 32, 33 and 35-38 have rewritten.

In accordance with MPEP 1453(V)(C), Applicants request that the Examiner renumber new claims 32, 33 and 35-38 as claims 31-36.

The undersigned confirms that the interview summary attached to the Office action is an accurate and complete summary of the interview.

It is felt that a full and complete response has been made to the Office action and, as such, places the application in condition for allowance. Such allowance is hereby respectfully

requested. If the Examiner feels, for any reason, that a personal interview will expedite the prosecution of this application, he is invited to telephone the undersigned.

Applicants do not believe that a fee is due in connection with this response. If, however, the Commissioner determines that a fee is due, he is authorized to charge Deposit Account No. 19-1345.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of William Stuchlik et al.
Reissue of Patent No. 6,493,896
Serial No. 10/684,324
Filed October 10, 2003
For BRUSH HEAD POSITIONING SYSTEM
Examiner Terrence R. Till

Art Unit 1744

August 8, 2006

STATUS OF CLAIMS AND REVISED SUPPORT FOR CLAIM CHANGES
(filed with Amendment C)

STATUS:

Claims 6, 7, 9, 11, 12, 14, 15, 17, 18, 19, 20, 21, 22 and 23 have been amended. Claims 24-30, 32, 33 and 35-38 have been added. Claims 31 and 34 have been canceled.

REVISED CLAIM SUPPORT:

The amendments to claims 6, 7, 9, 11, 12, 14, 18, 19, 20, 21, 22 and 23 are supported by Figures 1 and 2 and the specification describing Figures 1 and 2. For example, the following footnotes identify the columns and lines of U.S. Patent No. 6,493,896 which support amendments to claims 6, 7, 9, 11, 12, 14, 18, 19, 20, 21, 22 and 23:

6. The apparatus of claim 5 wherein the support [is] comprises a [traveling] nut, wherein the actuator comprises a motor rotating a screw which engages and drives the [traveling] nut, said nut being raised and lowered by rotation of the screw, and wherein the connector assembly comprises:

a slotted tube having a slot at one end receiving a pin sliding within the slot, the pin connected to the [traveling] nut, the tube supporting the head assembly at its other end; and

a compressible member within the tube [having one end engaging the nut and having another end engaging the tube] between the support and the head assembly;¹ and

wherein the sensor comprises a linear sensor detecting a length of the compressible member.

¹ 2/37, 42-43; 15/42-43; 15/50, 17/12-15; 17/46-47

7. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

- a vehicle adapted to ride on the surface;
- a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;
- a support on the vehicle connected to the head assembly;²
- an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support;
- a sensor detecting a position of the head assembly relative to the [surface] support;
- a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support; and
- a driving circuit responsive to the [head] position control and responsive to the sensor for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] support as detected by the sensor corresponds to the desired position as indicated by the [head] position control thereby controlling the relative engagement between the head assembly and the surface independent of the brush length or stiffness and thereby controlling the treatment of the surface by the head assembly.

9. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

- a vehicle adapted to ride on the surface;
- a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;
- a support on the vehicle connected to the head assembly;³
- an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support;
- a sensor detecting a position of the head assembly relative to the [surface] support;
- a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support; and
- a driving circuit responsive to the [head] position control and responsive to the sensor for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] support as detected by the sensor corresponds to the desired position as indicated by the [head] position

² 2/35; 4/63; 10/1; 12/13

³ 2/35; 4/63; 10/1; 12/13

control thereby controlling the relative engagement between the head assembly and the surface and thereby controlling the treatment of the surface by the head assembly;

[a support connected to the actuator and being raised and lowered by the actuator; and

a connector assembly including a compressible member between the support and the head assembly;]

wherein the sensor comprises a distance sensor connected between the support and the head assembly for detecting a distance between the support and the head assembly[; and

wherein the driving circuit responds to the distance sensor to control the head position of the head assembly relative to the surface to maintain contact between the head assembly and the surface].

11. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a vehicle adapted to ride on the surface;

a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;

a support on the vehicle connected to the head assembly;⁴

an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support;

a sensor detecting a position of the head assembly relative to the [surface] support;

a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support;

a driving circuit responsive to the [head] position control and responsive to the sensor for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] support as detected by the sensor corresponds to the desired position as indicated by the [head] position control thereby controlling the relative engagement between the head assembly and the surface and thereby controlling the treatment of the surface by the head assembly;

[a support adapted to be raised and lowered by the actuator;] and

a compressible member of variable length between the support and the head assembly;

wherein the sensor comprises a linear sensor detecting a length of the compressible member.

⁴ 2/35; 4/63; 10/1; 12/13

12. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a vehicle adapted to ride on the surface;

a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;

a support on the vehicle connected to the head assembly;⁵

an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support wherein the actuator comprises a motor rotating a screw in threaded engagement with [driving] a [traveling] nut [engaging the screw] of the support, said [nut] support being raised and lowered by rotation of the screw;

a sensor detecting a position of the head assembly relative to the [surface] support;

a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support;

a driving circuit responsive to the [head] position control and responsive to the sensor for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] support as detected by the sensor corresponds to the desired position as indicated by the [head] position control thereby controlling the relative engagement between the head assembly and the surface and thereby controlling the treatment of the surface by the head assembly;

a slotted tube having a slot at one end receiving a pin sliding within the slot, the pin connected to the [traveling] nut, the tube supporting the head assembly at its other end; and

a compressible member within the tube [having one end engaging the nut and having another end engaging the tube] between the support and the head assembly;⁶

wherein the sensor comprises a linear sensor detecting a length of the compressible member.

14. The apparatus of claim 12 wherein the sensor comprises a switch on the tube for detecting compression of the compressible member [wherein the repeatable position corresponds to the position of the device] when [it] the head assembly engages the surface.

18. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a vehicle adapted to ride on the surface;

⁵ 2/35; 4/63; 10/1; 12/13

⁶ 2/37, 42-43; 15/42-43; 15/50; 17/12-15; 17/46-47

a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;

a support on the vehicle connected to the head assembly;⁷

an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support;

a sensor comprising a switch on the actuator for⁸ detecting a position of the head assembly relative to the [surface] support;

a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support; and

a driving circuit responsive to the [head] position control and responsive to the sensor for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] support as detected by the sensor corresponds to the desired position as indicated by the [head] position control thereby controlling the relative engagement between the head assembly and the surface and thereby controlling the treatment of the surface by the head assembly[;

wherein the sensor comprises a switch on the actuator for detecting a position of the head assembly].

19. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a head assembly adapted to carry a device for engaging the surface;

a support connected to the head assembly;⁹

an actuator raising and lowering the [head assembly relative to the surface] support;

a position control responsive to operator input for indicating a head position of the [device] head assembly relative to the [surface] support or range of head positions of the [device] head assembly relative to the [surface] support, said head position or said range of head positions indicating a distance or range of distances, respectively, between the [device] head assembly and the [surface] support; and

a controller responsive to the position control for selectively actuating the actuator to maintain the [device] head assembly in the head position or within the range of head positions as indicated by the position control independent of the brush length or stiffness.

⁷ 2/35; 4/63; 10/1; 12/13

⁸ 19/9-33

⁹ 2/35; 4/63; 10/1; 12/13

20. The apparatus of claim 19 further comprising:
 a pressure sensor detecting the pressure of [device]
the head assembly on the surface;
 a pressure control responsive to operator input for
 indicating a desired pressure or a desired range of
 pressures for the [device] head assembly on the surface; and
 wherein the controller is responsive to the pressure
 control and the pressure sensor for selectively actuating
 the actuator to maintain the pressure of the device on the
 surface at the desired pressure or within the desired range
 of pressures.

21. An apparatus for use on a surface and responsive to
 an operator, said apparatus comprising:
 a head assembly adapted to carry a device for engaging
 the surface;

a support connected to the head assembly;¹⁰
 an actuator raising and lowering the [head assembly
 relative to the surface] support;
 a position control responsive to operator input for
 indicating a [head] desired position of the [device] head
assembly relative to the [surface] support or range of
 [head] desired positions of the [device] head assembly
 relative to the [surface] support, said [head] desired
 position or said range of [head] desired positions
 indicating a distance or range of distances, respectively,
 between the [device] head assembly and the [surface]
support;

a controller responsive to the position control for
 selectively actuating the actuator to maintain the [device]
head assembly in the [head] desired position or within the
 range of [head] desired positions as indicated by the
 position control;

a motor on the head assembly for rotating the device;
 a torque control circuit having an input receiving a
 signal for controlling the torque of the motor; and
 a torque control responsive to operator input for
 indicating a desired torque or a desired range of torques
 for the motor;

wherein the controller is responsive to the torque
 control for providing a torque control signal to the input
 of the torque control circuit to maintain the motor at the
 desired torque or within the desired range of torques.

22. The apparatus of claim 21 further comprising:
 a pressure sensor detecting the pressure of [device]
the head assembly on the surface;

¹⁰ 2/35; 4/63; 10/1; 12/13

a pressure control responsive to operator input for indicating a desired pressure or a desired range of pressures for the [device] head assembly on the surface; and
 wherein the controller is responsive to the pressure control and the pressure sensor for selectively actuating the actuator to maintain the pressure of the device on the surface at the desired pressure or within the desired range of pressures.

23. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a head assembly adapted to carry a device for engaging the surface;

a support connected to the head assembly;¹¹

an actuator raising and lowering the [head assembly relative to the surface] support;

a position control responsive to operator input for indicating a repeatable [head] position of the [device] head assembly relative to the [surface] support or a repeatable range of [head] positions of the [device] head assembly relative to the [surface] support, said repeatable [head] position or said repeatable range of [head] positions indicating a distance or range of distances, respectively, between the [device] head assembly and the [surface] support; and

a controller responsive to the position control for selectively actuating the actuator to maintain the device in the repeatable [head] position or within the repeatable range of [head] positions as indicated by the position control independent of the brush length or stiffness.

The amendments to claims 15 and 17 are supported by Figures 3-8 and the specification describing Figures 3-8. For example, the following footnotes identify the columns and lines of U.S. Patent No. 6,493,896 which support amendments to claims 15 and 17:

15. An apparatus for use on a surface and responsive to an operator, said apparatus comprising:

a vehicle adapted to ride on the surface;

a head assembly on the vehicle adapted to carry a device for engaging and treating the surface;

a support on the vehicle connected to the head assembly;¹²

¹¹ 2/35; 4/63; 10/1; 12/13

¹² 2/35; 4/63; 10/1; 12/13

an actuator on the vehicle [supporting the head assembly over the surface and] adapted to raise and lower the [head assembly relative to the surface] support;

a [sensor detecting] detector providing a count¹³ corresponding to a position of the [head assembly] support relative to the [surface] actuator;

a [head] position control, responsive to input from the operator, indicating a desired position of the head assembly relative to the [surface] support;

a driving circuit responsive to the [head] position control and responsive to the [sensor] detector for energizing the actuator to raise and lower the [head assembly] support so that the position of the head assembly relative to the [surface] actuator as detected by the [sensor] detector corresponds to the desired position as indicated by the [head] position control thereby controlling the relative engagement between the head assembly and the surface and thereby controlling the treatment of the surface by the head assembly;

wherein the actuator comprises a motor rotating a screw in threaded engagement with¹⁴ [driving] a [traveling] nut [engaging the screw] of the support, said [nut] support being raised and lowered by rotation of the screw;

[wherein the sensor comprises a detector for providing a count corresponding to the position of the head;]

wherein the [head] position control is set by the operator to indicate [the] an additional preset amount the support is to be lowered below a repeatable position;¹⁵ and

a comparator for comparing the count to the additional preset amount, said driving circuit being responsive to comparator to lower the [traveling nut] support below [a] the repeatable position [when the count corresponds to a position which is higher than] the additional preset amount as indicated by the [head] position control.

17. The apparatus of claim 16 further comprising a switch for detecting when the [nut] support is in the repeatable position, and wherein the switch resets the counter and wherein the driving circuit is responsive to the comparator to lower the [traveling nut] support a number of counts corresponding to the additional preset amount.

¹³ 11/46; 12/33-41; 18/55

¹⁴ 9/58

¹⁵ 9/9-10, 34-35; 11/7-8, 18-19, 22-23; 18/25

Added claims 24, 25, 28, 35 and 38 are supported by Figures 1-8 and the specification describing Figures 1-8. For example, the following footnotes identify the columns and lines of U.S. Patent No. 6,493,896 which support added claims 24, 25, 28, 35 and 38:

24.¹⁶ Apparatus for use by an operator on a surface comprising:
 a vehicle adapted to move across the surface;
 a head assembly on the vehicle for treating the surface;
 a support on the vehicle connected to the head assembly;
 an actuator on the vehicle for raising and lowering the support and the head assembly;
 a resiliently compressible member interposed between the support and the head assembly;
 a sensor for sensing a repeatable position of the support; and
 a control responsive to user input and the sensor for controlling the actuator to drive the support downward from said repeatable position an additional distance corresponding to said user input to compress said compressible member.

25.¹⁷ The apparatus of claim 24 wherein said repeatable position of the support corresponds to a position in which the head assembly is in contact with the surface.

28.¹⁸ Apparatus for use by an operator on a surface comprising:
 a vehicle adapted to move across the surface;
 a head assembly on the vehicle for treating the surface;
 a support on the vehicle connected to the head assembly;
 an actuator on the vehicle for raising and lowering the support and the head assembly;
 a resiliently compressible member interposed between the support and the head assembly;
 a sensor for sensing when the head assembly is lowered to a position corresponding to contact of the head assembly with the surface, and for generating a signal in response thereto; and

¹⁶ 15/31-55; 19/34-51; 20/41-60

¹⁷ 18/22-27

¹⁸ 17/52-18/18

a control responsive to user input and the sensor for controlling the actuator to drive the support down to lower the head assembly until said signal is received and thereafter to drive the support down an additional distance to compress the compressible member an amount corresponding to said user input.

35.¹⁹ Apparatus for use by an operator on a surface comprising:

- a vehicle adapted to move across the surface;
- a head assembly on the vehicle for treating the surface;
- a support connected to the head assembly;
- an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;
- a spring co-axial with the screw interposed between the support and the head assembly; and
- a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input;

²⁰wherein the support comprises a nut and wherein the actuator comprises a screw in threaded engagement with the nut and a motor for rotating the screw to raise and lower the nut, said apparatus further comprising a connector assembly connecting the head assembly and the support; and

²¹wherein the connector assembly comprises an outer tube containing said spring and connected to the head assembly, said support further comprising an inner tube secured to the nut and slidable inside the outer tube, and a pin connected to the inner tube slidable in a slot in the outer tube.

38.²² The apparatus of claim 37 wherein the detector comprises a magnet adapted to rotate in synchronism with the screw, a Hall sensor detecting rotation of the magnet and providing a pulse, and a counter for counting the pulses of the Hall sensor, the comparator being operable to compare the count of the counter to the preset amount.

¹⁹ 17/52-18/18; 17/22-51; 19/34-51

²⁰ 19/9-23; 17/52-18/18

²¹ 17/52-18/18

²² 18/64-19/2

Added claims 26, 29, 32 and 37 are supported by Figures 3-8 and the specification describing Figures 3-8. For example, the following footnotes identify the columns and lines of U.S. Patent No. 6,493,896 which support added claims 26, 29, 32 and 37:

26.²³ The apparatus of claim 25 wherein the sensor comprises a switch on the vehicle for sensing when the support is lowered to said repeatable position, and wherein the control is responsive to the switch for controlling the actuator to drive the support downward from said repeatable position the additional distance to compress the compressible member.

29.²⁴ The apparatus of claim 28 wherein the sensor comprises a switch on the vehicle for sensing when the support is lowered to a position corresponding to contact of the head assembly with the surface and for generating a signal in response thereto, and wherein the control is responsive to the switch for controlling the actuator to drive the support down the additional distance to compress the compressible member.

32.²⁵ Apparatus for use by an operator on a surface comprising:

- a vehicle adapted to move across the surface;
- a head assembly on the vehicle for treating the surface;
- a support connected to the head assembly;
- an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;
- a spring co-axial with the screw interposed between the support and the head assembly;
- a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input; and
- ²⁶a switch on the vehicle for sensing when the head assembly is in contact with the surface, and wherein the control is responsive to the switch for controlling the actuator to lower the support and compress the spring the preset amount.

²³ 15/65-16/4; 18/23-27; 19/3-8; 19/9-33

²⁴ 15/65-16/4; 18/23-27; 19/3-8; 19/9-33

²⁵ 17/52-18/18; 17/22-51; 19/34-51

²⁶ 15/65-16/4; 18/23-27; 19/3-8; 19/9-33

37.²⁷ Apparatus for use by an operator on a surface comprising:

a vehicle adapted to move across the surface;

a head assembly on the vehicle for treating the surface;

a support connected to the head assembly;

an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

a spring co-axial with the screw interposed between the support and the head assembly; and

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input;

²⁸wherein the support comprises a nut and wherein the actuator comprises a screw in threaded engagement with the nut and a motor for rotating the screw to raise and lower the nut, said apparatus further comprising:

a detector for providing a count corresponding to the position of the support relative to the actuator;

a position control set by an operator to indicate a preset amount; and

a comparator for comparing the count to the preset amount, said control being responsive to the comparator to lower the support the preset amount below a position at which the head assembly is in contact with the surface.

Added claims 27, 30, 33 and 36 are supported by Figures 1 and 2 and the specification describing Figures 1 and 2. For example, the following footnotes identify the columns and lines of U.S. Patent No. 6,493,896 which support added claims 27, 30, 33 and 36:

27.²⁹ The apparatus of claim 25 wherein the sensor comprises a linear potentiometer between the head assembly and the support for sensing when the support is lowered to the repeatable position, and wherein the control is responsive to the linear potentiometer for controlling the actuator to drive the support downward from said repeatable

²⁷ 17/52-18/18; 17/22-51; 19/34-51

²⁸ 15/57-64; 18/27-67; 19/3-8

²⁹ 15/56-64; 17/21-22

position the additional distance to compress the compressible member.

30.³⁰ The apparatus of claim 28 wherein the sensor comprises a linear potentiometer between the head assembly and the support for sensing when the support is lowered to a position corresponding to contact of the head assembly with the surface and for generating a signal in response thereto, and wherein the control is responsive to the linear potentiometer for controlling the actuator to drive the support down the additional distance to compress the compressible member.

33.³¹ Apparatus for use by an operator on a surface comprising:

- a vehicle adapted to move across the surface;
- a head assembly on the vehicle for treating the surface;
- a support connected to the head assembly;
- an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;
- a spring co-axial with the screw interposed between the support and the head assembly;
- a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input and
- ³²a linear potentiometer between the head assembly and the support for sensing a length of the spring, and wherein the control is responsive to the linear potentiometer for controlling the actuator to lower the support and compress the spring the preset amount.

36.³³ Apparatus for use by an operator on a surface comprising:

- a vehicle adapted to move across the surface;
- a head assembly on the vehicle for treating the surface;
- a support connected to the head assembly;
- an actuator on the vehicle comprising a screw in threaded engagement with the support, and a motor for rotating the screw to raise and lower the support and the head assembly connected thereto;

³⁰ 15/56-64; 17/21-22

³¹ 17/52-18/18; 17/22-51; 19/34-51

³² 15/56-64; 17/21-22

³³ 17/52-18/18; 17/22-51; 19/34-51

a spring co-axial with the screw interposed between the support and the head assembly;

a control responsive to user input for controlling the actuator to lower the support until the head assembly is in contact with the surface and the spring is compressed a preset amount corresponding to the user input; and

³⁴a linear sensor for detecting a length of the spring, the control being responsive to the linear sensor to operate the actuator to raise and lower the support.

Respectfully submitted,

/Frank R. Agovino/

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³⁴ 16/9-23; 17/23-18/18



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NOTICE OF ALLOWANCE AND FEE(S) DUE

000321 7590 11/22/2006

SENNIGER POWERS
ONE METROPOLITAN SQUARE
16TH FLOOR
ST LOUIS, MO 63102

EXAMINER

TILL, TERRENCE R

ART UNIT

PAPER NUMBER

1744

DATE MAILED: 11/22/2006

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,324	10/10/2003	William Stuchlik	ALTO 4335.3	9423
TITLE OF INVENTION: BRUSH HEAD POSITIONING SYSTEM				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$0	\$0	\$1400	02/22/2007

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

000321 7590 11/22/2006

**SENNIGER POWERS
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16TH FLOOR
ST LOUIS, MO 63102**

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,324	10/10/2003	William Stuchlik	ALTO 4335.3	9423

TITLE OF INVENTION: BRUSH HEAD POSITIONING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$0	\$0	\$1400	02/22/2007

EXAMINER	ART UNIT	CLASS-SUBCLASS
TILL, TERRENCE R	1744	015-049100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.563).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
 Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,324	10/10/2003	William Stuchlik	ALTO 4335.3	9423
000321	7590	11/22/2006	EXAMINER	
SENNIGER POWERS ONE METROPOLITAN SQUARE 16TH FLOOR ST LOUIS, MO 63102			TILL, TERRENCE R	
			ART UNIT	PAPER NUMBER
			1744	
DATE MAILED: 11/22/2006				

Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)

A reissue patent is for "the unexpired part of the term of the original patent." See 35 U.S.C. 251. Accordingly, the above-identified reissue application is not eligible for Patent Term Extension or Adjustment under 35 U.S.C. 154(b).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/684,324

Examiner

Terrence R. Till

Applicant(s)

STUCHLIK ET AL.

Art Unit

1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 8/8/06.
2. ☒ The allowed claim(s) is/are 1-30, 32, 33 and 35-38.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 2006.11.01
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


Terrence R. Till
Primary Examiner
Art Unit: 1744

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

Page 1 of 1

PATENT NO : RE39,581 E
APPLICATION NO.: 10/684,324
ISSUE DATE : April 24, 2007
INVENTOR(S) : Stuchlik et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 20, claim 9, between lines 52 and 53: - - - a sensor detecting a position of the head assembly relative to the [surface] *support*; - - - should be inserted.

Column 25, claim 29, lines 61-62: - - - *and wherein the control is generating a signal in response thereto*, - - - should be deleted.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Senniger Powers LLP
100 North Broadway, 17th Floor
St. Louis, Missouri 63102

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.